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NOTES ON GEOGRAPHIC DISTRIBUTION

Pisces, Siluriformes, Doradidae, *Astrodoras* Bleeker, 1862: First record in the Colombian Amazon

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ABSTRACT: This note presents the first record of the genus *Astrodoras* Bleeker, 1862 (Siluriformes, Doradidae) in the Colombian Amazon (Amacayacu National Park). The single species described for the genus is *A. asterifrons* (Kner, 1853), reported only from the Amazon River basin in Brazil and Bolivia. The Colombian specimens are characterized by a gas (swim) bladder that is different from that of *A. asterifrons*, indicating that they represent a distinct and undescribed species of *Astrodoras*.

The family Doradidae comprises a group of South American tropical catfishes characterized principally by the presence of: i) a series of bony scutes along the side of the body, each of which has a robust, backward-directed, medial thom and sometimes with smaller spines and serrations, ii) a well-developed cephalic shield, iii) a subterminal mouth, iv) a large, exposed posterior cleithral process, v) strongly serrated dorsal- and pectoral- fin spines, and vi) a ventrally-flattened body (Eigenmann 1925; Sabaj and Ferraris 2003). Doradidae is diagnosed among Siluriformes by uniquely having an infranuchal scute, a bony laminar expansion of the ligament between the posterior nuchal plate and first rib (Birindelli *et al.* 2008).

The taxonomic history of the family dates back to Linnaeus (1758). The first comprehensive taxonomic revision by Eigenmann (1925) recognized 68 species in 26 genera. More recently Sabaj and Ferraris (2003) recognized 72 valid species belonging to 30 genera from a total of 127 nominal species and 41 genera proposed for the family. Taxonomic studies over the past six years and recent exploration of remote river systems have added one new subfamily, one new genus and 16 new species of doradis (Sabaj 2005; Sousa and Rapp Py-Daniel 2005; Birindelli *et al.* 2007, 2008; Higuchi *et al.* 2007; Piorski *et al.* 2008; Sabaj-Pérez and Birindelli 2008; Sabaj *et al.* 2008; Birindelli and Sousa 2010), including one fossil (Sabaj -Pérez *et al.* 2007). A total of 43 species and 19 genera belonging to the family Doradidae have been recorded in the Colombian Amazon (Maldonado-Ocampo *et al.* 2008), but there has been no previous report of the genus *Astrodoras* Bleeker, 1862 in Colombia.

Kner (1853) proposed the new species *Doras asterifrons* on the basis of its gas bladder morphology, and later Kner (1855) provided a more detailed description of the species based on specimens from "Barra do Rio negro" [Manaus, Brazil] and "R. Guaporé" [tributary to rio Madeira forming border between Bolivia and Brazil]. Bleeker (1862) transferred species *asterifrons* to his new genus *Astrodoras*, distinguished in part by having dorsal spine serrated anteriorly and edentulous laterally and posteriorly. Eigenmann (1925) further distinguished *Astrodoras* by a number of characteristics including: greatest width 2.6 times in length, caudal fulcra (= procurrent caudal-fin rays) laminate, covering almost half of the upper and lower surfaces of the peduncle, preorbital (= infraorbital one) with posterior edge erect and bearing about ten spines, gas bladder with posterior (= terminal) diverticulum small and short or forked to its base with laterally turned horns. Higuchi *et al.* (2007) grouped *Astrodoras* with *Amblydoras*, *Anadoras*, *Hypodoras*, *Merodoras*, *Physopyxis* and *Scorpiodoras* into a new monophyletic subfamily Astrodoradinae diagnosed by having: infraorbital one serrated (except in *Anadoras*) and participating in the orbital margin (except in *Physopyxis*), four to seven pleural ribs; spinous posterior cleithral process (except in *Anadoras*); and posteroinferior portion of the coracoid exposed. Other distinguishing features of Astrodoradinae, but more widespread in Doradidae, include: simple barbels, nuchal foramina absent, and gas bladder with abbreviated cordiform shape (Higuchi *et al.* 2007).

Astrodoras asterifrons has been reported from: Jutahy [Jutaí]; Teffé [Tefé]; Manaus; Porto do Moz; Serpa; Santarém; Maciél, Guaporé River; San Joaquín; and Cupai River in Brazil (Eigenmann 1925; Sabaj and Ferraris 2003). The genus *Astrodoras* remains monotypic, however, Sabaj Pérez and Sousa (*personal communication*) recognize two additional undescribed species from the Brazilian Amazon.

The specimens of *Astrodoras* reported here (Figure 1) were captured in Amacayacu National Park, one of the 55 protected areas that make up the Colombian system of National Parks (Parques Nacionales Naturales de Colombia 2005). Declared in 1975, it is located in the so-called Colombian "trapezius", in the municipalities of Leticia and Puerto Nariño (Figure 2). Collections were made using

stationary gill nets (8 - 15 m length; 25, 37, 50 mm mesh). The specimens were collected between 17:00 – 20:00 h in Lago Julio, a lentic oxbow (locally referred to as a "madre vieja" [=old mother] or "tipisca") associated with the lower reach of Amacayacu Creek (Figure 3) and in littoral habitat in Matamatá Creek. The water was visually characterized as intermediate between whitewater/blackwater, with suspended solids ≥ 87 mg L^{-1}, soft water (calcium ≤ 1.5 mg L^{-1}), and dissolved organic nitrogen ≤ 0.36 mg L^{-1}. The bottom was composed of fine organic material and leaf litter over a clay substrate. The specimens were preserved in 10 % formalin solution and laboratory conserved in 70 % ethanol; they are deposited in Colección Ictiológica de la Amazonia Colombiana (CIACOL) of the Instituto Amazónico de investigaciones Científicas – SINCHI.

Collected material.

Astrodoras sp.: CIACOL 418, 5 specimens. Locality: Río Matamatá, Parque Nacional Natural Amacayacu, Municipality of Leticia, Amazonas, Colombia (3°48'49" S, 70°15'06" W), 154 m. Oct 17, 2008. Colectors: Aricari, G., A. Ferreira and C. Roa-Fuentes (Figures 1A and 1B).

Astrodoras sp.: CIACOL 419, 1 specimen. Locality: Lago Julio, río Amacayacu, Parque Nacional Natural Amacayacu, Municipality of Leticia, Amazonas, Colombia (3°47'38" S, 70°18'31" W), 64 m. Oct 11, 2008. Colectors: Aricari, G., G. Vela and C. Roa-Fuentes.

Astrodoras sp.: CIACOL 438, 2 specimens. Locality: Río Matamatá, Parque Nacional Natural Amacayacu, Municipality of Leticia, Amazonas, Colombia (3°48'49" S, 70°15'06" W), 154 m. Oct 18, 2008. Colectors: Aricari, G., A. Ferreira and C. Roa-Fuentes (Figure 1C).

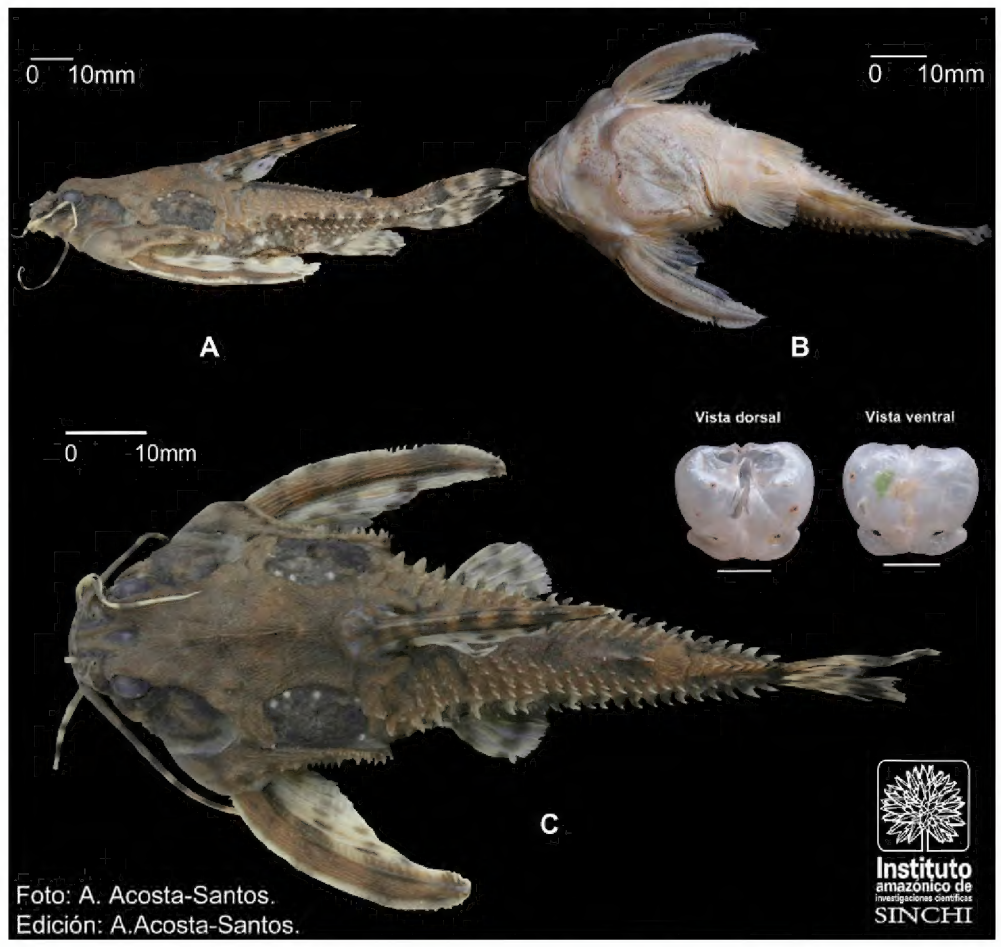

FIGURE 1. Lateral (A), Ventral (B), and Dorsal (C) Views of specimens *Astrodoras* sp. captured in Amacayacu National Park, Colombian Amazon, with inset depicting dorsal (left) and ventral (right) views of disembodied gas bladder (A and B: CIACOL 419; C: CIACOL 418).

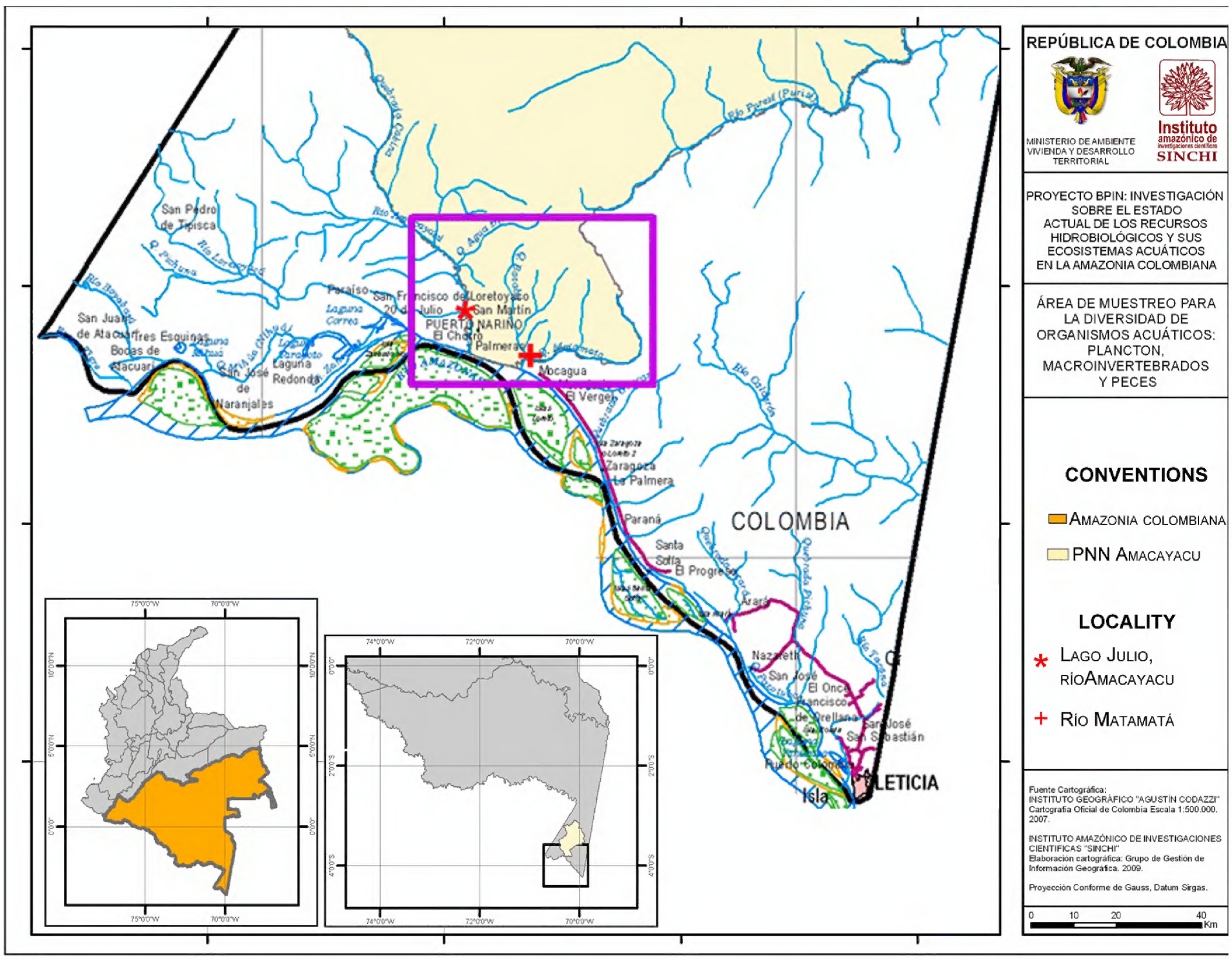

FIGURE 2. Detailed maps showing capture localities for *Astrodoras* sp. reported here from the Colombian Amazon. The pink area represents the 293,000 hectares of Amacayacu National Park.

Kner's (1853) description of *A. asterifrons* was accompanied by an illustration of the gas bladder showing a simple posterior (terminal) diverticulum. Eigenmann (1925) recognized variation in the external morphology of gas bladders he examined in specimens captured in Jutahy [Jutaí] and Santarém, Brazil. Specimens from Jutahy [Jutaí] had a gas bladder characterized by a pair of posterior diverticula with laterally divergent "sausage-shaped" horns (similar to the Colombian specimens in Figure 1C); while those from Santarém had a short, simple posterior diverticulum (similar to the one illustrated by Kner). Based on this and other morphological differences currently under study by Sabaj Pérez and Sousa (*personal communication*), specimens having a gas bladder with paired posterior diverticula, including those captured in Amacayacu National Park, belong to a new and undescribed species of *Astrodoras*.

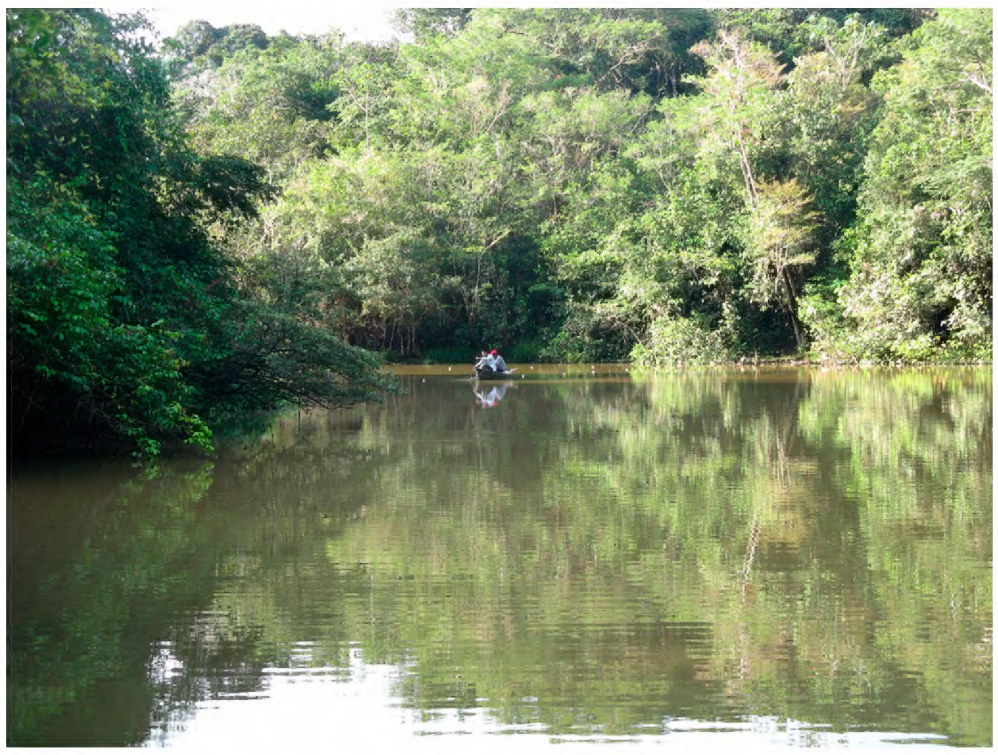

Figure 3. Locality where *Astrodoras* sp. (CIACOL 419) was captured in the Amacayacu National Park, Colombia. Photo by C. Roa-Fuentes.

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